

REMARKS

The Rejection

Claims 13-21, 23, 38-40 and 42-52 are rejected on the ground of nonstatutory (obviousness type) double patenting over claims 1-13 of commonly assigned U.S. Patent 7,094,494.

Claims 13-52 are rejected under 35 USC 103(a) as being unpatentable over Kelemen (US 6,081,992) in view of Shkuratoff (CA 2,165,152) and further in view of Takashi (JP 09-259,842).

The Claims

Claims 1-52 have been examined. Claims 19, 36, and 42-52 have been canceled. The remaining independent claim is claim 13. Independent claim 1 has been amended herein to include (at claim 13, lines 1-13) the identical language of claim 1 of the parent application Ser. No. 10/336,261, which has now matured into issued patent Anglin, U.S. 6,833,215. Furthermore independent claim 13 has been amended for clarity to recite "the cathode slabs are stacked within the housing along the cell's central longitudinal axis so that said openings devoid of cathode material form a central core along said longitudinal axis". (This is clearly shown, for example, at Fig. 5). Independent claim 13 has been amended herein to recite the second rupture zone forms a weld on the cell's boundary surface. Independent claim 13 has also been amended to include all of the subject matter of dependent claim 36 relating to cell balance. Namely independent claim 13 now also recites that the cell is balanced so that the cathode is in excess such that the ratio of theoretical capacity of the MnO₂ based on a theoretical specific

value of 370 mAmp-hr per gram MnO₂, divided by the mAmp-hr capacity of zinc based on a theoretical specific value of 820 mAmp-hr per gram zinc, is between about 1.2 and 2.0. Such balancing reflects a preferred operation of the flat cell of the invention. Accordingly, claim 36 has been canceled.

Arguments Against the Rejection

The nonstatutory (obviousness type) double patenting rejection over claims of commonly assigned U.S. Patent 7,094,494 B2 (stemming from predecessor Applic. Ser. 10/414,750) is overcome by the Terminal Disclaimer enclosed herewith. (37 CFR 1.321 (c)) The filing of the Terminal Disclaimer is appropriate to overcome this nonstatutory double patenting rejection because the instant application (Assignment recorded at Reel 014757/Frame 0824) is commonly assigned to the Gillette Company and Applic. Ser. 10/414,750 which matured into U.S. 7,094,494 (Assignment recordings at Reel 14349/Frame 0718 and at Reel 14585/ Frame 0875) is also assigned to the Gillette Company. Withdrawal of the nonstatutory double patenting rejection is in order and respectfully requested.

The subject present application Ser. 10/722,879 is a continuation in part of Applic. Ser. 10/414,750 (now U.S. 7,094,494 B2) which in turn is a continuation in part of Applic. Ser. 10/336,261 which has matured into granted U.S. patent Anglin (6,833,215 B2). The present Application (Ser. 10/722,879) contains all of the descriptive subject matter of the original parent application 10/336,261 (U.S. 6,833,215 B2) reflected in common Figs. 1, 1A, 2, 3, 4, and 5. These figures, and supporting description in the specification pertaining thereto support the language of claim 1 in said parent Application

10/336,261. The claim 1 of parent (Ser. No. 10/336,261) was allowed as filed and issued as claim 1 in U.S. 6,833,215 B2). In allowance of parent application 10/336,261 (U.S. 6,833,215 B2) the Examiner had cited Keleman (U.S. 6,081,992) as the most pertinent art.

In the allowance of the parent application over Kelemen (U.S. 6,081,992) the Examiner acknowledged that Applicant's housing includes an open end and an opposing closed end and does not have any integral cylindrical sections. Claim 1 as issued in parent Applic. Ser. 10/336,261 (Anglin, U.S. 6,833,215) was allowed, inter alia, since the Examiner acknowledged as follows:

"The Kelemen reference (U.S. 6,081,992) does, however, include integral cylindrical sections at the end of the cell. The cylindrical feature is considered an important feature for sealing the cell and inserting the electrode materials. The art offers no support for modifying the cell structure of Kelemen to arrive at the instant invention. The instant specification describes the benefit of not having a cylindrical section of the cell to allow for cuboid or parallelepiped shape in order to be used as replacements for flat rechargeable cells (pages 4-7 of the instant specification). (Notice of allowance, parent application Ser. 10/336,261)

The same description in the parent Application 10/336,261 (Anglin, U.S. 6,833,215) at p.4-7 describing the parallelepiped or cuboid shape is repeated at p.4-7 the subject present CIP Application Ser. Ser. 10/722,879. There is direct support in the subject present CIP Application that the casing does not have any cylindrical sections. For example, it is stated as follows in subject CIP Application Ser. 10/722,879 at p. 18, lines 12-14.: "Outer casing 100 as shown in the figures preferably is of cuboid shape, thus without having any integral cylindrical

sections." (The same statement appears in the parent application, Ser. No. 10/336,261, at, p. 11, line 24 to p. 12, line 2). By contrast it may be readily seen that Kelemen's outer casing 10 has a "cylindrical section 14" that transitions from the prismatic section 12 to form the top end. (See, Kelemen, col. 2, line 66 to col. 3, line 1 and figures).

Applicant has amended independent claim 13 herein of the subject CIP Application to include (at claim 13, lines 1-13) the identical language of claim 1 of the parent application Ser. No. 10/336,261, which has now matured into issued patent Anglin, U.S. 6,833,215. Thus, amended claim 13 of the subject application now specifically includes the limitation "said housing not having any integral cylindrical sections" which also appears in issued claim 1 of the parent.

In addition amended independent claim 13 also includes more restrictive language that "the cathode comprises a plurality of rectangular shaped cathode slabs; wherein each of said slabs has a central opening devoid of cathode material; wherein said cathode slabs are stacked within the housing along the cell's central longitudinal axis so that said openings devoid of cathode material form a central core along said longitudinal axis, with the outer surface of said cathode contacting the inside surface of said housing".

Applicant has left intact in amended claim 13 the language applying to Applicant's "vent mechanism" as in original claim 13 but in addition has added by amendment herein that the second rupture zone forms of a weld on said boundary surface. (The described "vent mechanism" comprising a first rupture zone comprising a groove on said boundary surface and a second

rupture zone forms a weld on said boundary surface as recited in amended claim 13 is all new matter not appearing in original parent application Ser. 10/336,261.)

More specifically the vent mechanism recited in independent claim 13 comprises "a first rupture zone comprising a groove on said boundary surface, said groove defining an underlying material region thinner than the average thickness of said boundary; and a second rupture zone forms a weld on said boundary surface, wherein the first zone ruptures when gas pressure within the cell rises to a first pressure level and said second zone ruptures when gas pressure within the cell rises to a second pressure level being higher than said first pressure level allowing gas from within the cell to escape from the cell interior through said ruptures. Claim 13 as above indicated has been amended herein to recite that "the second rupture zone forms a weld on said boundary surface".

Representative claim 15 (depending from claim 13) recites that the first zone on said boundary surface ruptures when gas pressure within the cell interior reaches a pressure level between about 250 and 800 psig (1724×10^3 and 5515×10^3 pascal gage).

Representative claim 17 (depending from claim 13) recites that the second zone on said boundary surface ruptures when gas pressure within the cell interior reaches a pressure level between about 800 and 2500 psig (5515×10^3 and 17235×10^3 pascal gage).

As above indicated independent claim 13 as amended contains the identical language (at claim 13, lines 1-13) as appearing in

issued claim 1 of parent application Ser. 10/336,261 (U.S. 6,833,215), but claim 13 also includes the above referenced additional limitations. The Examiner has already acknowledged in Examination of said parent application 10/336,261 (U.S. 6,833,215) that the same passage (now appearing as above referenced amended claim 13, lines 1-13 of the subject application) distinguished over Kelemen. Accordingly, Kelemen should not be a substantive reference against amended independent claim 13 of the subject present application as it was not considered a substantive reference against claim 1 of the parent Application. Namely, amended independent claim 13 herein expressly excludes any cylindrical section in the cell and Kelemen does not show or contemplate such cell construction.

The claims 13-41 stand rejected under 35 USC 103(a) as being unpatentable over Kelemen, (U.S. 6,081,992) in view of Shkuratoff (CA 2,165,152) and further in view of Takashi (JP 09-259,842).

Amended independent claim 13 is believed to distinguish over Kelemen as above indicated because amended independent claim 13 now "excludes any cylindrical section". Although the cell in Kelemen shows at least one cathode slab having an opening therethrough devoid of cathode material, Kelemen does not show or contemplate Applicant's cell construction which excludes any cylindrical section. Kelemen describes the importance of having such section in sealing the cell and inserting the electrode material. By contrast Applicant describes the benefit of not having such cylindrical section, so the cells may be used as replacements for flat rechargeable cells. (Specification at p. 4-7 and p. 18, lines 12-14.)

Shkuratoff (CA 3,165,152) teaches a safety vent for sealed prismatic batteries. Vents formed of grooves or scores are shown on the cell housing surface. The groove is described as being generated by various methods including stamping or chemical etching. Shkuratoff discloses that it is advantageous to locate such safety vent grooves in areas on the cell housing at high stress levels, since the burst pressures in such areas are generally lower or more consistent. Shkuratoff teaches that for prismatic type cell the stress is higher at points near the edges and far from the corners. Shkuratoff teaches that the weakening groove can be formed in any face of the container. He teaches that the grooves may have smaller thickness than the battery casing. He suggests that the weakening groove should be placed near parallel to and adjacent to the length dimension of the cell housing. Shkuratoff indicates that the grooves may be designed to rupture at various levels of gas pressure buildup, for example, ranging from 150 to 250 or even 300 or 400 psi (p. 11-13). However, there is no indication that Shkuratoff is concerned with employing any vent mechanism other than the grooves on the container surface. Shkuratoff is preoccupied with disclosing the use of weakened grooves on the container surface as a vent mechanism for gas pressure buildup within the cell. He is not concerned with other vent mechanisms.

Shkuratoff does not disclose the use or benefit of having both a primary and auxiliary vent mechanisms employing different vent mechanisms. He mentions that the cover of the prismatic cell may be welded to the container using a YAG laser. However, there is no indication that the weld on the cover is designed to or intended to be employed as an auxiliary rupture mechanism.

Takashi (JP-09-259,842) shows a sealed rectangular battery comprising a rectangular case and a rectangular cover enclosing the battery interior. A self recovering valve is shown as a mechanism for allowing gases to vent from the cell when a desired internal gas pressure buildup is reached. The safety valve 4 is actuated by a spring 6 causing valve body 7 to lift along aperture pathway 10 as pressure exceeds a design threshold. Gas escapes to the environment through aperture 10 when the valve opens. The valve reseats when the cell's gas pressure reduces. Takashi does not disclose use of grooves in the battery casing surface to function as a primary or auxiliary vent mechanism. Takashi discloses that the battery casing 1 is closed with a cover lid 2 which is welded to the casing. Takashi discloses that a secondary vent mechanism can be formed by intentionally making a weld on one side of the cover weaker than the remaining weld. The spring actuated safety valve is designed to actuate a lower pressure than the weakened cover weld. Thus, Takashi discloses a first and second venting mechanism, but there is no disclosure or contemplation in this reference of employing a groove on the surface of the casing as one of the vent mechanisms.

In sum Shkuratoff discloses grooves on the cell casing surface which are designed to rupture at a predefined level of cell gas pressure buildup and thus function as a venting mechanism for a prismatic cell. However, Shkuratoff is not concerned with and does not disclose or contemplate having different types of venting mechanisms which activate at different levels of cell pressure. Takashi contemplates the use of a first and second venting mechanism which activate at different pressure levels, but does not disclose or contemplate the use of grooves on the surface of the casing as one of such

vent mechanisms. Takashi discloses a recoverable spring actuated valve as the first vent mechanism. The valve is designed to actuate when the internal pressure of the cell builds up to a predetermined level. Takashi includes a second vent mechanism which is a weld on one side of the cover which is weaker than the remaining weld securing and the cover to the casing. Takashi does not disclose or contemplate the use of grooves on the casing surface as providing a vent mechanism.

The rejection of Applicant's independent claim 13 under 35 USC on the basis of the combination of references Kelemen in view of Shkuratoff, further in view of Takashi is believed traversed in that these references alone or in combination do not disclose or suggest any desirability of combining individual elements disclosed in each to arrive at the invention defined in Applicant's amended claim 13. For example, there is no teaching of the advantage of combining the grooved vent of Shurkatoff with the weak welded vent taught in Takashi with the cathode slab configuration of Kelemen to arrive at applicant's cell as recited in amended claim 13. The Court has held that under section 103 teachings of references can be combined if there is some suggestion or incentive to do so. ACS Hospital Systems, Inc. v. Montefiore Hospital, 221 USPQ 929 at 933 (CAFC 1984). See also, C.R. Bard, Inc. v M3 Sys., Inc., 48 USPQ 2d 1225 (Fed. Cir 1998). In the recent KSR International Co. v Teleflex Inc., et al 550 U.S. ____ (2007) the Court acknowledges that a motivation for combining references, while it should not be a mandatory criteria, can nevertheless provide a helpful insight in evaluating whether combining elements from individual references to arrive at Applicant's claimed invention, is obvious. (Opinion of the court at p. 14) Kelemen discloses some of Applicant's cathode slab configuration. In any event since

Kelemen does not disclose Applicant's cell housing without any cylindrical section, one in the art would resort to Applicant's disclosure to fill in this missing information. Such hindsight analysis is inapplicable. See, e.g., Grain Processing Corp. v. American Maize-Products Co., 5 USPQ2d 1788, 1792 (Fed. Cir. 1988). See also, In re Dembiczak, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). To support a rejection under 35 USC 103 the references must provide a basis within their own teachings and not the teaching of Applicant's application.

Accordingly, amended independent claim 13 herein is believed patentably distinguishable over the combination of references Kelemen in view of Shkuratoff, further in view of Takashi. Independent claim 13 as now amended is believed patentable over this combination of references for the above stated reasons. The rejection of claim 13 under 35 USC 103 is believed traversed and withdrawal of the rejection is requested.

The Examiner has indicated that the claims 18-22 and 31 cannot be given patentable weight because of their product by process format. Claims 18, 20, 21, and 22 apply to the type of welding for the second rupture zone (laser welding claims 18, 20, 21, and Nd:Yag laser welding claim 22 or resistance welding claim 31). Claim 19 applies to forming the grooves by stamping. Applicant has canceled claim 19. The product by process claims 18, 20, 21, 22, and 31 which indicate the type of welding employed to form the second rupture zone should be permitted as appropriate product by process claims. This is because Applicant's product with respect to the "weld" forming the second rupture zone cannot be adequately defined in another manner. Different types of welds have different characteristics which are not readily amenable to chemical definition. The

product by process format is appropriate in such situations where the product resists definition by other than the process by which it was made. The Court has stated: "Product by process claims are not specifically discussed in the patent stature. The practice and governing law have developed in response to the need to enable an applicant to claim an otherwise patentable product that resists definition by other than the process by which it was made. In re Thorpe 777 F.2d 695, 697, 227 USPQ 964, 966 (Fed Cir. 1985). Applicant specifically requests that the Examiner permit the use of such claim format in defining the nature of the weld forming the second rupture zone. (The Examiner's attention is also directed to claim 8 of commonly assigned predecessor patent U.S. 7,094,494 in which the expression "second rupture zone is formed by a laser weld" appears.)

Dependent claims 14-41 (claims 19 and 36 are canceled) depend directly or indirectly from amended independent claim 13. These claims reflect specific embodiments of the invention and further restrict claim 13. Thus, the dependent claims should be allowed if the base claim 13 is allowed. Reconsideration and allowance of dependent claims 14-41 on this basis is requested.

Patentability of dependent claim 17 is specifically argued herein. Claim 17 incorporates all of the limitations of amended base claim 13. Claim 17 recites that the second rupture zone, (defined now in claim 13 as a weld rupture zone) ruptures at a pressure level between about 800 and 2500 psig (5515×10^3 and 17235×10^3 pascal gage). Takashi, which discloses a weld rupture zone in combination with a self-recovering spring valve rupture zone, does not disclose any particular rupture pressure range for the weld rupture. Takashi certainly does not disclose

Applicant's rupture range between about 800 and 2500 psig (5515×10^3 and 1724×10^3 pascal gage) for the weld zone as recited in claim 17. Thus, claim 17 is believed patentable for the reasons of patentability argued herein with respect to base claim 13 and for the additional reasons that none of the references disclose Applicant's rupture pressure range for the second rupture zone, namely, the weld zone within the pressure range as recited in claim 17. Allowance of claim 17 is specifically requested.

The set of drawings filed with the Application on Nov. 26, 2003 have been approved.

Terminal Disclaimer with respect to commonly assigned U.S. patent 7,094,494 and the present application Ser. 10/722,879 is enclosed herewith.

Applicant has made every effort to place the application in condition for allowance. Allowance of the Application upon reconsideration is respectfully requested.

Authorization is hereby given to debit Deposit Account 502271 for any amount owing or credit the same account for any overcharges in connection with this communication.

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Respectfully submitted,



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